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- (71) Applicant (for all designated States except US): GENSET SA [FR/FR]; 24, rue Royale, F-75008 Paris (FR).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): CAVAREC, Laurent [FR/FR]; 48, rue de Terre-Neuve, F-75020 Paris (FR). CHUMAKOV, IIva [FR/FR]; 691, rue de la Noue, F-77000 Vaux-le-Penil (FR). DESTENAVES, Benoit [FR/FR]; 4, rue d'Eschborn, F-91230 Montgeron (FR). GONTHIER, Catherine [FR/FR]; 71, rue de la Dauphine, Bat B6, F-91100 Corbeil-Essonnes (FR). ELIAS, Isabelle [FR/FR]; 2 place de l'Eglise, F-78120 Sonchamp (FR).

- (74) Agent: SERONO INTERNATIONAL S.A. INTEL-LECTUAL PROPERTY; 12, Chemin des Aulx, CH-1228 Plan-les-Ouates (CH).
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(57) Abstract: The invention encompasses polypeptides and polynucleotides of three novel bipolar disorder-associated potassium channel polypeptides, KCNQ2-15bx, KCNQ2-15by and KCNQ2-15bz. The invention further relates to the use of potassium channels comprising KCNQ2 subunits for screening for modulators thereof, the use of these modulators for treating mental disorders such as bipolar disorder, schizophrenia and depression, and drugs comprising these modulators. The invention also discloses biallelic markers located in the KCNQ2 gene and their use for diagnosing mental disorders.

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